

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
*SOUTH DAKOTA SUPPLEMENTS ITALICIZED***

TROUGH OR TANK

(no.)
CODE 614

DEFINITION

A trough or tank, with needed devices for water control and waste water disposal, installed to provide drinking water for livestock.

PURPOSE

This standard applies to all troughs, *fountains*, or tanks installed to provide livestock *and wildlife* watering facilities that are supplied by streams, springs, wells, ponds, or other sources.

The purpose is to provide watering facilities for livestock and wildlife at selected locations that will protect vegetative cover through proper distribution of grazing or through better grassland management for erosion control.

Another purpose is to protect streams, ponds, and water supplies from contamination by providing alternate sources of drinking water.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where there is a need for new or improved watering places to permit the desired level of grassland management, to reduce health hazards for livestock, and to reduce livestock waste in streams, *ponds and water supplies*.

PLANNING CONSIDERATIONS

Water Quantity

1. Effects on components of the water budget.
2. Effects on downstream flows or aquifers that affect other water uses or users.

Water Quality

1. Effects on erosion and movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.
2. Effects on the visual quality of onsite and downstream water resources.
3. Effects on wetlands and water-related wildlife habitats.

DESIGN CRITERIA

The trough or tank shall have adequate capacity to meet the water requirements of the livestock *and wildlife*. This will include the storage volume necessary to carry over between periods of replenishment. *Where water supplies are dependable and livestock are checked daily, fountains with little or no water storage capacities may be used. Fountains must be capable of delivering the daily water requirements to the entire herd within a short period of time.*

Storage. *The storage capacity for the facility must meet the livestock water requirements on the basis of the conservation plan. Storage can be provided in a central storage facility, drinking facilities, or a combination. Storage provided in drinking facilities is preferred over central storage, unless central storage can be fully utilized by gravity flow.*

The livestock water system must have the capacity to supply at least the following minimum:

Conservation practice standards are reviewed periodically and updated if needed. The current version of this standard is posted on our website at www.sd.nrcs.usda.gov or may be obtained at your local Natural Resources Conservation Service.

MINIMUM WATER USE PER ANIMAL	
Animal	gal/day
Milking Cow	45
Dry cow	30
Heifer	15
Calves (1-1/2gal/100 lb. body weight)	10
Swine, finishing	5
Nursery	1
Sow & litter	8
Gestating sow	6
Horses and beef animals	20
Sheep and goats	2
100 chicken layers	9
100 turkey	15
(Suggested reference: Midwest Plan Service Structures and Environment Handbook - MWPS)	

For very reliable water supply sources, one day of storage at each outlet is recommended. For water sources with high maintenance requirements, a week or more of storage may be appropriate.

Drainage and Overflow. The site should be well drained, or if not, drainage measures will be provided. Areas adjacent to the trough or tank that will be trampled by livestock shall be graveled, paved, or otherwise treated to provide firm footing and reduce erosion.

Trough and tank installments must be designed to prevent movement of the tank when empty and to prevent entry by livestock.

Automatic water level control or overflow facilities shall be provided. Provision shall be made to dispose of excess or overflow water away from the drinking facility to avoid boggy conditions at the site or foundation failure. The overflow pipe will be of sufficient length to carry overflow to a non-erosive outlet. Overflow pipes shall have an inside diameter of at least one and one-half inches. A cleanout shall be provided. Valves or pipes shall be protected by shield or covers to prevent damage by livestock. The trough and outlet pipes will be protected from freezing and ice damage. Freeze-proof troughs or electric heaters may be used at some sites.

Distribution. Watering facilities should normally meet the following guidelines:

Type of Terrain	Maximum distance from forage to water
Gentle relief	1 mile
Rough relief	1/2 mile

Concrete. Type II cement shall be specified for concrete structures containing more than 20 cubic yards of concrete. For structures larger than 20 cubic yards, minimum concrete compressive strength shall be 3,500 psi. All reinforced concrete floors for steel rim tanks shall extend a minimum of 2 feet beyond the periphery of the tank.

Metal. Metal tanks shall have sturdy reinforced rims and must be protected from rapid destruction by corrosion. Metal rims set in concrete must be coated with a plastic or asphalt based sealant to protect the metal at all concrete/metal contact points. Metal tanks with largest dimension less than 10 feet must be constructed from 18 gauge or heavier metal. Larger tanks must be 16 gauge or heavier.

Fiberglass. Tanks shall have a minimum thickness of 3/16 inch. Fiberglass tanks shall be secured with posts and cross bracing or other suitable methods to provide a permanent installation.

Other Materials. Other materials may be used where they will provide long life in service. Use of manufactured materials must be in accordance with the manufacturer's recommendations or a design prepared by an engineer.

PLANS AND SPECIFICATIONS

Plans and specifications for installing troughs, fountains and tanks shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

Check periodically to see if any type of debris has fallen into the trough which may restrict the inflow or outflow system. Check tank for leaks or cracks and repair immediately if any cracks or wall separations are found. Check the automatic water level device to insure that it is operating properly. Make certain that that area adjacent to the trough is well protected with gravel, paving, or good cover. Be sure that the outlet pipe has a free outlet and is not causing any serious erosion problems.

If the trough has not been designed to prevent damage from freezing, it should be prepared for winter weather. This may include a measure such as adding material in the storage area to take up expansion.

Algae and iron sludges sometimes are problems in watering facilities. Chemicals such as copper sulfate and chlorine have been used. *State and Environmental Protection Agency* rules and regulations are to be followed when recommending chemicals.